I believe equal to any in Ireland. In the summer is made a considerable quantity of excellent cheese, said to equal the best from England. In the strand, opposite the Irish quarter, on digging a little below the surface, there is found plenty of peat, leaves of trees, and hazel nuts; these nuts contain a hard transparent stone, resembling crystal, but whether the kernels are really petrified into this state, as some imagine, or merely congealed matter, I must leave the naturalist to determine: near this is also found excellent alabaster. Near the town is plenty of pipe-clay, and formerly a great quantity was exported to England. Along the beach is plenty of sea-weed; it is commonly of that species from which kelp is made; and is likewise used by the farmers as a manure.

This town has been a Corporation since the reign of Elizabeth, who granted the charter to Arthur Chichester (then governor). This was afterwards confirmed by James I. with some additional privileges.* The government of the town, is vested in a Mayor, Recorder, Sheriffs, Aldermen, and Burgesses, viz. 17 Aldermen, and 24 Burgesses.† The Mayor is elected annually, the first Monday after midsummer, and enters into office at Michaelmas. The Corporation has the privilege of making freemen at will; any person resident, and admitted by the old freemen, present in court, is entitled by the charter to be made; but this right is often overruled by the court. The number of freemen at present amounts to about 1100. For a long series of years, the Corporation was influenced by the Donegall family; but lately they have proved themselves independent by electing a Burgess, to serve in parliament. The present Mayor, has also been elected, by the independency.

The boundary of the Corporation is nearly square, being about four miles; the land whereof is vested in the Corporation; it is all let out except about 1500 acres, which is used as a common.

Near the town are several handsome villas, the most remarkable are Prospect, the seat of Henry C. Ellis, esq. Pausilypo, the seat of William D. Burleigh, esq. Sea-park, the seat of Thomas L. Stewart, esq. and Scoutbush, the seat of James Craig, esq. M. P. The latter gentleman's seat is built on an ancient military post, called the Scout-guard, and was formerly entered by draw-bridges; a deep trench that encompassed it is still to be seen. Adjoining is a craggy hill, called Knockogh, signifying a low hill; the town is supposed to have taken a part of its former name from this place, viz. Knock, from the hill, and Fergus, after its founder.

(To be Continued.)

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* Among other privileges formerly possessed was the following. The merchants had the liberty of importing all manner of merchandize, at one third part of the duties chargeable at any other part in the kingdom. This valuable privilege they sold to government about the year 1640, for the small sum of £.500! and their trade was instantly transferred to Belfast.

The Mayor can issue attachments against ships, or their cargoes, or against persons on board such ships, for the recovery of debts contracted any where: his jurisdiction extending from Beerhouse, county Down, to Fair Forelands, county of Antrim, the Bay of Bangor and pool of Garmoyle excepted. The water bailiff of the town, is the officer who puts these attachments in execution. The Mayor also claims salvage of all wreck found within his jurisdiction, on the coast.

† The Mayor is elected from the Aldermen; the Sheriffs from the Burgesses. The Aldermen and Burgesses, are mostly non-resident, many of them without a foot of ground in the Corporation.

For the Belfast Monthly Magazine.

OF THE MAGNET, AND ITS PRINCIPAL PHENOMENA.

OF all the phenomena exhibited to us by nature, magnetism, or the properties of the loadstone, may with justice be considered as the most extraordinary, as the causes of the effects produced by them, have occasioned the greatest difficulties to philosophers; for it must be confessed that notwithstanding all their attempts to explain them, we are as yet acquainted only with facts.

The magnet is a metallic stone, commonly of a greyish or blackish colour, compact and very heavy, and is usually found in iron mines. It affects no particular form, exhibits no external marks, to distinguish it from the meanest productions of the bowels of the earth. But its property of attracting or repelling iron, and of directing itself to the north, when at liberty to move, gives it a title to be ranked among the most singular objects of nature.

This stone, properly speaking, is merely an iron ore, but of that kind, which is called poor, because it contains only a small quantity of metal. Modern metallurgists, indeed, have been able to extract iron from it; but beside that it is difficult to be fused, it is so unproductive, that it would not pay for the expense of working it.

But it may be asked here, why is not every kind of iron ore magnetic? This is a question, to which in our opinion, no answer has ever been given. Formerly the loadstone was exceedingly rare. The name *magnes*, by which it was known both among the Greeks and Romans, seems to have originated in Magnesia, a province of Macedonia, where it was in great abundance, or which furnished the first magnets known.

But the loadstone has been since found in almost every region of the earth, and particularly in iron mines. The island of Elba,* so celebrated for its mines of that metal, wrought from the earliest ages, is said to furnish the largest and best magnets. The ancients were acquainted with no other property, than that which it has of attracting iron: but the moderns have discovered several others; such as its communication, direction, declination, and inclination, to which may be added its annual and daily variation.

Every person is acquainted with the attractive force which the magnet has upon iron. If filings of that metal be presented to a magnet, even at some distance, the filings will be seen to dart themselves toward the stone, and adhere to it. The case will be the same with any small or light bit of iron, as a needle. This experiment may be performed also in the following manner. Suspend a long iron needle in a state of equilibrium, by means of a silk thread, or rather on a point or pivot, so as to leave it at full liberty to move: present it to a magnet, at the distance of several inches, or even several feet, then if the magnet be endowed with proper force, you will see one end of the needle turn towards it, until it be as near to it as possible. If the needle float on water, on a small bit of cork, it will not only turn one of its ends to the magnet, but it will continue to approach, till it come in contact with it.

All these phenomena will take place, even if there be between the magnet and the needle, a plate of copper or glass, or a board, or any other body whatsoever, iron excepted; which proves that the magnetic virtue is not intercepted by any of these bodies, but the last.

EXPERIMENT I.

To find the poles of a magnet: If a magnet be immersed in iron filings, and then drawn out, it will be found covered over with them, but it will be observed, that there are two places, diametrically opposite to each other, where the filings are closer, and where the small oblong fragments stand, as it were upright, while in other places they lie flat. These are the poles, which are to be found in every magnet, and possess different and peculiar properties. One of these points is called the north pole, and the other the south, because if the magnet be freely suspended, the former will of itself turn to the north, and consequently the other will be directed to the south. When it is intended to perform experiments with a magnet, these two points must first be determined.

EXPERIMENT II.

Provide a magnet, and having determined its two poles, make it float on the water, by placing it on a piece of cork, of a sufficient size; if then you present to the north pole

*This island, formerly Ilva, is situated on the coast of Italy, nearly opposite, and at no great distance from that district, formerly known by the name of Duchy of Piombino.

of this stone, the north pole of another, the former will be repelled instead of attracted: but if you present to its north pole, the south pole of another, it will be attracted.

In like manner, if to the south pole of the former, the south pole of the latter be presented, the former will recede: but if to the same south pole, the north pole of the second be presented, it will approach.

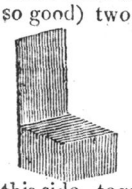
The poles then of the same name repel, and those of a different name attract each other.

EXPERIMENT 111.

If a magnet be cut in a direction perpendicular to the axis passing through its two poles, A and B, there will be formed by the section two new poles, as F and E; so that if A be the south pole of the whole stone, E will be a north pole, and F a south pole.

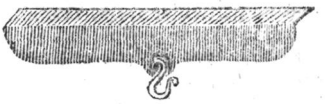
A magnet, however good, unless it be very large, will scarcely support a few pounds of iron; and in general the weight which a magnet can carry is always very much below its own weight. But means have been found out, by employing what is called arming, to make it produce a much more considerable effect. We shall therefore describe the method of arming a magnet.

First, give the magnet a figure nearly regular, and square its sides, where the two poles are situated, so that these two sides may form two parallel planes. Then make of soft iron (for steel is not so good) two pieces of this shape, viz.



the long and flat side of which may be of the same length and breadth as the faces of the magnet, where the poles are situated. The proper thickness, however, of this side, together with the projection of the foot, and its thickness can only be found by repeated trials. These two pieces must embrace the magnet on the two faces where the poles are, the feet passing below, as if to support it; and they must be fastened in that situation by transverse bands of copper, surrounding the magnet, and compressing the long branches of these pieces against the faces of the poles.

Then provide a piece of soft iron of the annexed form, viz.



a little longer than the distance between the bands of iron, applied to the poles of the magnet, and in thickness somewhat more than the flat faces of the lower part of the feet of the arming. The height must be regulated by convenience. Pierce a hole in it towards the middle, for the purpose of suspending from it the weight to be supported by the magnet. This fastened to the above pieces by bands of copper, or iron, completes the arming.*

A magnet armed in this manner is sensibly increased in power, so as to support from twenty to thirty times its own weight.

Lemery says, he saw a magnet of the size of a moderate apple, which supported twenty-two pounds. One has been seen of eleven ounces, which could support twenty-eight pounds; a sum above 200*l.* was demanded for it. M. de Condamine possessed one, given him by Maupertuis, which was capable of supporting a weight much greater than any other known. We do not remember its dimensions, or its weight, neither of which was very remarkable, but if we recollect right, he used to say, that it could support sixty pounds.

Researches have been made to discover whether there be any other bodies, besides iron, susceptible of being attracted by the magnet, from which

* This process of *arming* seems to proceed on the principle of the impermeability of iron by the magnetic effluvia, and that consequently, when the magnet has been armed (might we not much better say, cased) all round, except at one pole, the effluvia is then compelled to exert its combined influence in the one direction: hence the process may be very much simplified, as the only thing necessary to be done, is to provide such a case of soft iron, as will contain the magnet, and so contrived as to allow of taking the magnet out to change its pole, according as the attractive or repulsive power may be wanting.

it appears, that there are not. Yet Muschenbroek says, that the magnet seemed to exercise an action on a stone which he calls *Lough Neagh**. We are not acquainted with this stone, but it is probably some kind of iron-ore, in which this metal is very little mineralized.

In his "Cours de Physique Experimentale," Chap. vii. he gives an account of some trials, made on a great many different kinds of matter, to ascertain whether they were susceptible of being attracted by the magnet. He found that this stone, without any preparation, attracted the whole, or a great many of the particles in different kinds of sand and earth, which he enumerates. Several others presented no particles susceptible of attraction, until they had been exposed to the action of fire, by bringing them to a red heat, and burning them with soap, or charcoal, or grease; after which, says he, they were attracted by the magnet, with nearly as much force as iron filings; such, adds he, are the earth, of which bricks are made, and which becomes red when burnt; also different kinds of bole coloured sand. Others, when burnt in this manner, presented only a few particles, susceptible of attraction.

This will not appear surprizing, if we compare the two following facts; the first is, that the magnet never attracts iron but when in its metallic state; and that it has no action on this metal, when calcined, or reduced to the state of an oxyd; the second is, that iron is universally diffused throughout nature, and in almost all bodies more or less distant from its metallic state. Bodies, which contain it in its metallic state are all, or in part, capable of being attracted by the magnet, without any preparation; but in others it is not susceptible of attraction, till it has been burnt with fat matters, which restore it to its metallic state.

EXPERIMENT IV.

The direction of the Magnetic Current.

Place an unwarmed magnet on a piece of paste board, and throw iron filings round it; if the paste-board be then gently tapped, the filings will be seen arranging themselves round the magnet in curved lines, which approaching each other, like the meridians in a map of the world, meet at its two poles.

This experiment favours the opinion of those who think that the magnetic phenomena depend on a fluid, which issues from one of the poles of the stone, and enters at the other, after having circulated round it.

EXPERIMENT V.

Which proves that the Magnet and Iron have a mutual action on each other.

Place two magnets, or a magnet and a piece of iron on two bits of cork made to float in a bason of water. Having then turned the north pole of the one towards the south pole of the other, provided two magnets are employed, if the two pieces of cork be left to themselves, you will see them proceed towards each other. The case will be the same if a bit of iron be presented to the north pole of the magnet. This attraction then is reciprocal.

Of the Communication of the Magnetic Property.

Magnetism, or the property of attracting iron, and of turning towards a certain point of the heavens, is not so peculiar to the magnet, as to be incapable of being communicated: but no bodies have yet been found susceptible of this communication, except iron and steel.

About a century ago, it was believed that contact alone, or the continued presence of a magnet, could produce this effect; but a method has since been discovered, to render a piece of iron magnetic, without the magnet; and these artificial magnets are even susceptible of acquiring a strength rarely found in natural magnets.

* The coincidence of this name with that of our lake at home, is too striking to be incidental; and it seems to furnish a ludicrous instance of Muschenbroek's ignorance beyond the limits of his immediate pursuit, and of Hutton's carelessness in his remarks, for this is part of one of his express commentaries, on the expected advantages of which the *new and improved* edition of Ozanam has been trumpeted forth. This *Lough Neagh*, if we may be allowed a conjecture, was a pebble of some kind from *the lake*, which might have contained a large proportion of iron ore.

EXPERIMENT I.

Method of Magnetising; and, first, of Communicating the Power by Contact.

Provide a magnet, armed or unarmed, and (if armed) make one of the feet of the armour, and one of the poles pass over a plate of tempered steel, such as the blade of a knife, but proceeding always in the same direction, from the middle, for example, towards the point. After performing this operation a certain number of times, the plate of iron will be found possessed of an attractive force.

The case will be the same, if a long slender bit of steel be left a long time attached to a magnet: the steel by remaining in that situation, will acquire the magnetic property, it will have poles like the magnet, so that the north pole will be at the end, which was near the south pole of the stone, and the end, which touched the north pole, will become the south pole.

EXPERIMENT II.

Method of making an Artificial Magnet with Bars of Steel.

Provide twelve bars of tempered steel, about six inches in length, six lines in breadth, and two in thickness. Care must be taken to mark them at one of their extremities, before they are tempered. Arrange six of these bars in a straight line, but so as to be in contact, and that the marked ends shall be directed to the north; take an armed magnet, and place it on one of these bars, with its north pole towards the marked end, and the south pole towards the other end: then move the stone over the whole line, beginning at the *unmarked* end of the first, and repeat this operation three or four times.

When this is done, remove the two bars, in the middle, and substitute them for those at the two extremities, which must be placed in the middle; then move the stone in the same direction over the four bars in the middle only (for it is needless to comprehend those at the extremities) and invert the whole line: that is turn up the face, which was turned downward, and magnetize the bars again in the same manner, taking care to transpose the bars at the extremities into the place of the middle ones.

By these means, you will have six magnetized bars, which must be formed into two parcels, each containing three. In these parcels, the northern extremity must be towards the same side, but when the one parcel is placed upon the other, care must be taken, that the northern extremity of the bars of the one, may rest upon the southern extremities of those of the other. These two parcels must touch at their upper part, and be separated on the other side: this separation may be effected by means of a bit of wood, placed between them.

(To be Continued.)

For the Belfast Monthly Magazine.

VIEW OF THE NATURAL SMALL-POX, &c.
BY JOHN ADDINGTON, ESQ.

HISTORY.

FOR twelve centuries, this disease has been known to continue its ravages, destroying in every year an immense proportion of the whole population of the world.

NATURAL SMALL-POX.

General character....In some instances mild, but for the most part violent, painful, loathsome, contagious, and dangerous to life.

Mortality....One in six, who have the disease, dies. At least half of mankind have it; consequently one in twelve of the human race perish by one disease! In London, 3000 annually. In the United Kingdom, 40,000.

Danger....One in three, has a dangerous disease.

Contagion....Contagion always accompanies it.

INOCULATED SMALL-POX.

General character....For the most part mild, but in some instances violent, painful, loathsome, contagious, and dangerous to life.

Mortality....One in three hundred, inoculated dies. In London, probably one in one hundred! Inoculation of Small-pox, by spreading the disease, has increased its general mortality by 17 in every 1000.

Danger....One in thirty or forty, has a dangerous disease.